stationary, while the adjacent ones on either side are in motion—then those which have been still begin to play, and those that were previously moving remain still: no regular succession of procedure is observable; but some portion of the bands of cilia are kept constantly in action, all seeming to perform their duties quite irre-

spective of the rest.

"The tentacula of these beautiful animals are, next to their cilia, the most interesting portions of their structure. These organs are not always apparent, but remain enclosed in the creature's body. They are seldom displayed immediately after the Beroës have been captured, nor when the glass vessel in which they are kept is too much crowded. When, however, not more than five or six are placed together, the tentacula may be seen developed to their fullest extent, frequently extending above six times the length of the body of the animal. The tentacula are often projected from their tubes to their full extent by one impulse, and the slow uncoiling of the slender serpentine filaments from their margin is then very beautiful. Indeed it is scarcely possible to convey by any description an idea of the elegance and diversity of their forms. They seem endowed with exquisite sensibility, which, however, is not always equally delicate. At times, the slightest touch will cause a tentaculum to be drawn back into its sheath with a sudden jerk; at other times it is apparently unfelt. The Beroës never seem to be poised or supported in the water by the assistance of these remarkable organs; but sometimes, when they are extended to the bottom of the vessel, they seem to act as suckers, and to form fixed points whence the animal rises and falls at pleasure, appearing as if moored by these delicate and novel cables."

But our space warns us of the necessity of bringing this notice to a conclusion, which we do in the hope that the samples of the quality of Professor Rymer Jones's work which we have here given, will induce our readers to gratify themselves by a perusal of the whole. We may add, that it is illustrated by eight plates, well executed in chromolithography by Mr. Tuffen West, and containing excellent representations of nearly all the objects referred to in the book.

# PROCEEDINGS OF LEARNED SOCIETIES.

#### ZOOLOGICAL SOCIETY.

January 26, 1858.—P. L. Sclater, Esq., F.L.S., in the Chair.

ON NEW SPECIES OF BIRDS FROM THE RIO NAPO, IN THE RE-PUBLIC OF ECUADOR. BY PHILIP LUTLEY SCLATER, M.A., F.L.S. etc.

ANABATES MELANOPEZUS.

Supra saturate umbrino-brunneus, uropygio rufescente, cauda pure rufa: subtus pallide cinerascenti-brunneus, medialiter

dilutior; gula albicantiore sed rufo lavata; crisso rufescente; tectricibus subalaribus cum remigum intus nigricantium parte vicina læte rufis: rostro nigro, gonyde pallescente; pedibus nigricanti-plumbeis.

Long. tota 7.0, alæ 3.2, caudæ 3.0.

This species is very closely allied to Tschudi's A. ochrolæmus, with which it has been identified by M. de Lafresnaye. But as I have in my collection one of Tschudi's original specimens (of A. ochrolæmus), I am enabled to affirm that the two birds, though much resembling one another, cannot be considered as of the same species. Their upper surfaces are much alike; but beneath, the present bird is of a very pale ashy-brown, while A. ochrolæmus is nearly as dark below as above. In A. melanopezus the bill is shorter, stouter, and nearly all black, and the feet are blackish lead-colour; in A. ochrolæmus the bill is thinner and more elongated, yellowish, with the culmen horn-colour, and the feet are pale brown.

Anabates pulvericolor.—Synallaxis pulvericolor, Lafr. MS.

Terricolori-brunneus, interscapulio saturatiore, subtus dilutior; alis extus et cauda omnino rufis: rostro brevi, paulum incurvo,

albo; pedibus robustis, plumbeis.

Long. tota 6·2, alæ 2·6, caudæ 2·8; tarsi 0·8; rostri a fronte 0·5. A single bad specimen of this species belonging to M. de Lafresnaye, and kindly lent to me by him along with other specimens selected from this collection, bears the MS. name Synallaxis pulvericolor. It appears, however, to me to be better placed with Anabates, and more nearly resembles the figure given in Buffon's Pl. Enl. of Anabates guianensis, which is the type of the genus, than anything I have yet seen. Had it been from Guiana instead of the Rio Napo, I should have thought it was probably referable to that long-lost species.

It certainly is not a typical Anabates, speaking of the set of birds commonly so called, the bill being shorter, straighter, and smaller than in these birds generally, though not very different from that of Anabates erythrophthalmus, but it is more nearly allied to Anabates than to any species of Synallaxis with which I am acquainted.

SYNALLAXIS BRUNNEICAUDALIS. — Synallaxis brunneicauda, Lafr. MS.

Supra olivaceo-brunnea, alis extus et pileo castaneis, subtus obscure cinerascens, lateribus olivaceo indutis: caudæ rectricibus decem, colore saturate purpurascenti-brunneis, plumarum scapis nigris: tectricibus subalaribus ochraceo-flavis: rostro nigro, gonydis basi albicante: pedibus brunneis.

Long. tota 6·5, alæ 2·4, caudæ 2·7, rostri a fronte ·6, tarsi ·95.

A fine large Synallaxis, for which I have employed M. de Lafresnaye's MS. name. The only adult specimen is in bad condition. Both the examples belong to M. de Lafresnaye's collection.

SYNALLAXIS ALBIGULARIS.—Synallaxis albigula, Lafr. MS.

Supra murino-brunnea; cauda concolore; pileo postico et tectricibus alarum extus rufis; lateribus capitis et corpore subtus cinereis: loris albidis; gula et ventre medio pure albis, lateribus et crisso brunnescenti-cinereis: rostri nigricantis gonyde albicante: pedibus clare brunneis.

Long. tota 5.5, alæ 2.3.

A short-tailed species of *Synallaxis*, as I should judge from the only specimen under observation, in which, however, the medial rectrices are absent. It is very nearly allied to Temminck's *S. albescens*, but differs sufficiently in its white throat and belly, as far as I can judge from the unique specimen.

#### MALACOCICHLA MACULATA.

Catharus maculatus, J. Verreaux, MS.

Supra nigricanti-schistacea, pileo toto cum capitis lateribus nigerrimis: subtus ochracescenti-albida, lateraliter schistacea: gula et pectore summo triangulariter nigro maculatis, maculis quoque in ventris lateribus rotundis, obsolete schistaceis: tectricibus subalaribus nigro-schistaceis: rostro et pedibus flavis.

Long. tota 7.0, alæ 3.6, caudæ 2.8, rostri a fronte .6, a rictu .85,

tarsi 1.4.

This interesting bird is a close ally of Gould's Malacocichla Dryas from Guatemala, and I have therefore placed it in the same genus. It may be distinguished from that species by the dark slaty colour of the back, which in M. Dryas is greenish olive. Whether these birds will be ultimately separable from the genus Catharus is, I think, questionable; and M. Jules Verreaux is therefore quite as likely to be correct in his appellation of this species as I am in mine. Besides M. Dryas from Guatemala (P. Z. S. 1854, p. 285, pl. 75), Prince Bonaparte has described a Mexican species—M. mexicana (Compt. Rend. Aug. 2, 1856). The Prince also informed me (after a visit to M. de Lafresnaye's collection, which he made shortly before his decease) that Myioturdus fuscater, Lafr. R. Z. 1845, p. 341, belongs to this same genus—so that this is probably the fourth species known.

### THAMNOPHILUS ÆTHIOPS.

3. Ater unicolor; campterio et tectricibus subalaribus albo

variegatis: rostro et pedibus nigerrimis.

Q. Castaneo-brunneus unicolor, alis intus obscurioribus, maculis quibusdam tectricum superiorum majorum apicalibus cum campterii margine et tectricibus subalaribus flavicanti-rufis: cauda nigra: rostro et pedibus nigris.

Long. tota 6.0, alæ 2.8, caudæ 2.5, rostri a rictu .85, tarsi .9. This species is in colour like T. immaculatus, of a uniform black; but, whilst that has only a very insignificant white patch on the bend of the wing, the T. æthiops has the under wing-coverts as well

as the upper coverts close to the bend varied with white. Besides, the bill is much shorter and stouter, and the whole bird is smaller in its dimensions. Of *T. immaculatus* I make the corresponding measurements:—Long. tota 7.0, alæ 3.3, caudæ 3.0, rostri a rictu 1.0, tarsi 1.3.

#### THAMNOPHILUS CAPITALIS.

3. Cinereus, alis intus obscurioribus; pileo nigro: subtus dilutior, tectricibus subalaribus et marginibus remigum interioribus ochracescenti-albidis: cauda nigricante: rostro et pedibus plumbeo-nigris.

Q. Umbrino-brunneus; pileo rufo; subtus dilutior, gula albicantiore: rostro pedibusque plumbeis, illius mandibula inferiore

pallidiore.

Long. tota 5.7, alæ 2.5, caudæ 2.0, tarsi .75.

This Thannophilus belongs to the typical division of the group which contains T. nævius and its allies. It is easily distinguishable by its uniform cinereous plumage and black head, and by the absence of all markings on the wings and tail. M. Verreaux's collection contains a male not quite adult and two females of this species.

### DYSITHAMNUS LEUCOSTICTUS.

Supra umbrino-brunneus, pileo rufescentiore, pennis omnibus interne cinereis: subtus cinereus, capitis lateribus cum gula et pectore guttis elongatis albis, pennas medias occupantibus, maculatis: ventris lateribus et crisso olivaceo tinctis: cauda obscure nigra, extus brunneo marginata: rostro et pedibus nigris.

Long. tota 5.2, alæ 2.75, caudæ 2.0, tarsi 1.85.

This species is noticeable on account of the clear white elongated shaft-spots on the throat and breast, which distinguish it from other birds of the group. In two younger specimens in MM. Verreaux's collection these spots are hardly yet apparent, and the rich brown edging of the upper plumage is only partly assumed, leaving these parts of a brownish cinereous.

#### Pyriglena serva.

3. Nigra, subtus magis ardesiaca: macula magna interscapularium interna et tectricum alarium superiorum marginibus apica-

libus cum campterio albis; rostro et pedibus nigris.

Q. Olivascenti-cinerea, macula interscapularium interna alba: subtus saturate ferruginea; alis caudaque fuscis, tectricum alarium superiorum marginibus et tectricibus subalaribus rufescentibus; rostro superiore nigro, inferiore flavido: pedibus fuscis.

Long. tota 5·3, alæ 2·5, caudæ 2·3, rostri a rictu 0·8, tarsi 0·9. Distinguished from Pyriglena domicella and P. atra by its smaller size. Sir William Jardine recently lent me some specimens of Formicariidæ from Quixos, among which were examples of both sexes of this same species. I do not know Lanius funebris, Licht. (Doubl. p. 47), from Cayenne, but as far as I can judge from his short characters, it can hardly be identical with the present bird.

### HETEROCNEMIS ALBIGULARIS.

Brunnescenti-olivaceus, plumis omnibus nigro obsolete marginatis, alis caudaque nigricantibus; fascia alarum duplici alba: subtus pallide cinerascens, gutture albo, ventre nigricante transversim lineato: rostro nigro, mandibulæ inferioris basi albido: pedibus fuscis.

Long. tota 4.2, alæ 2.35, caudæ 0.9, rostri a rictu 0.9, tarsi 1.0. Obs.—Affinis H. Bamblæ ex Cavenna, sed crassitie paulo majore,

rostro longiore et gula alba dignoscenda.

### CONOPOPHAGA TORRIDA.

Clare brunnescenti-olivacea, dorsi plumis nigro partim variegatis; capite supra, alis et cauda ferruginescenti-brunneis: tectricibus alarum et secundariis extus macula apicali fulvo-flavida ornatis: plumarum fasciculo postoculari albo: subtus clare ferruginea, gula et ventre medio albicantibus, hypochondriis et ventre imo magis fulvis: mandibula superiore nigra, inferiore cornea: pedibus pallidis.

Long. tota 4.6, alæ 2.8, caudæ 1.2, tarsi 1.0.

M. Verreaux's collection contained a single specimen of this apparently new *Conopophaga*, not in very good plumage. A more perfect example in the British Museum, which is from Chamicurros in Eastern Peru, has furnished my specific characters.

This is a typical species of the genus somewhat allied to C. lineata

of South-eastern Brazil.

#### GRALLARIA FLAVIROSTRIS.

Brunnescenti-olivacea, loris et capitis lateribus rufescentibus: subtus alba, pectoris medii et lateralis plumis pallide rufis, utrinque nigro late limbatis, quasi squamatis; gulæ laterum plumis rufo tinctis, fascia nigricante intus marginatis; tectricibus subalaribus pallide rufis; rostro flavo; pedibus clare brunneis.

Long. tota 4.2, alæ 2.7, caudæ 1.1, tarsi 0.9, rostri a rictu 0.7. This diminutive *Grallaria* is very like the Venezuelan bird which I described in the Proceedings for last year (P. Z. S. 1857, p. 129) under the name of *G. loricata*. Like that, it has a pectoral band formed by the black margins of the pale rufous feathers; but in the present species the band is much narrower, and the head is not chestnut.

#### GRALLARIA FULVIVENTRIS.

Olivaceo-brunnea, pileo obscuriore, alis extus magis rufescentibus, loris albidis: subtus gula et abdomine medio albis, pectore, ventris lateribus et crisso cum tectricibus alarum inferioribus saturate fulvis, pectore lineis quibusdam nigris variegato: rostro superiore nigro, inferiore, nisi apice, flavo: pedibus pallide brunneis.

Long. tota 5.5, alæ 3.2, caudæ 1.4, tarsi 1.5, rostri a rictu 0.95. This *Grallaria* seems to belong to a species distinct from anything

yet described. The bird most resembling it of those I have met with, is G. macularia, of which there are specimens in the Leyden Museum; but that is rather a peculiar species, remarkable for its denuded orbits and short, strong hind-nail, while this bird has the hind-nail slender and rather long, and is in every respect a typical member of the genus.

# Genus novum Agathopus.

Rostrum modicæ longitudinis, brevius quam caput, subulatum, culmine recto, ad apicem paulum incurvo, gonyde ascendente, mandibula superiore ad apicem dentata, naribus, prout in omnibus hujus familiæ generibus, coopertis: alæ brevissimæ, rotundatæ, remige septima sextam et quintam paulo excedente et longissima, tertia secundarias æquante: pedes validi, tarsis longis, antice scutellis novem regularibus, postice scutellis minutis, tectis; unguibus curvatis, acutis; cauda modicæ longitudinis, multum rotundata, rectricibus duodecim, extimis dimidio brevioribus, ceteris gradatim longioribus; tectricibus supra-caudalibus densissimis.

### AGATHOPUS MICROPTERUS.

Obscure nigricanti-schistaceus, dorso postico cum ventre imo, lateribus et crisso saturate brunneis, radiis transversis nigris, in tergo vix apparentibus, subobsolete variegatis: rostro nigro, pedibus clare brunneis.

Juvenis.—Radiis transversis nigris omnino obtectus, gula magis

cinerascente, et colore toto magis brunneo.

Long. tota 3·3, alæ 2·3, caudæ 1·9, rostri a rictu ·7, tarsi 1·0.

This curious bird, of which the collection contains two examples, seems intermediate in form, as in size, between Merulaxis atra and the Scytalopodes. From the former it differs in the shape of the bill, which is shorter, has the gonys curved upwards, and wants the elevated feather-tufts on the front; from Scytalopus it is distinguished by its thicker, stronger and larger bill, longer tail, and longer tarsi. These genera, along with Pteroptochus and its allies, appear to me to constitute a well-distinguished group, for which I propose to use the term Pteroptochidæ, deduced from the oldest and best-known genus (instead of Lafresnaye's name Rhinomydeæ) according to the orthodox rule for forming the names of families. The distinctions of these birds as a group are well pointed out in the Ornithology of D'Orbigny's Voyage (p. 192), and their most essential character, as is there stated, consists in the covered nostril, only a narrow longitudinal aperture being left, which occurs in every species. They must certainly be arranged next to the Formicariidæ, within the limits of which they have been placed by Cabanis and other writers; and I am not myself certain that it may not be possible to consider them only as a subfamily belonging to that series.

#### TODIROSTRUM PICATUM.

Supra nigrum, loris et secundariarum trium ultimarum pogoniis Ann. & Mag. N. Hist. Ser. 3. Vol. ii. 11 externis cum macula rectricis unæ utrinque extimæ apicali albis, his flavicante tinctis; subtus album, tectricibus subalaribus et margine campterii flavicanti-albis : rostro superiore

nigro, inferiore albo; pedibus pallide fuscis.

Long. tota 3.5, alæ 2.1, caudæ 1.3, rostri a fronte 6.0, tarsi 6.5. This peculiar Todirostrum is quite unlike any other known member of the genus in colouring. In structure it is generally typical, but with the bill not quite so broad towards the apex as in some others.

## CYCLORHYNCHUS ÆQUINOCTIALIS.

Clare olivaceus, remigibus alarum nigricantibus flavicanti-viridi late limbatis; cauda fusca, rectricum marginibus dorso concoloribus: subtus flavicans, gula grisescente; pectore et lateribus cum crisso olivaceo perfusis; tectricibus subalaribus sulphureis; rostro superiore nigro, inferiore albo; pedibus carneis. Long. tota 6.0, alæ 2.6, caudæ 2.3, rostri a rictu 0.8, tarsi 0.7.

This bird is a close ally of the Brazilian Cyclorhynchus olivaceus, but may be distinguished by its shorter wings and tail, and by the

pure yellow of the middle of the abdomen.

March 9, 1858.—Dr. Gray, F.R.S., V.P., in the Chair.

## A Monograph of the genus Miniopteris. BY ROBERT F. TOMES.

Perhaps there is no order of Mammalia in which there is so great a diversity in the forms of the different species as in the Cheiroptera. On examining the genus Vespertilio in the extended form in which it is given by M. Temminck, and more recently by M. Wagner, the naturalist will find an assemblage of creatures which he will have great difficulty in making out to his satisfaction. But in endeavouring to separate them into groups or genera for the purpose of description, he will be equally puzzled. An examination of the British species merely, will illustrate the nature of the difficulty to which I refer. Take, in the first place, the common Noctule Bat, and the equally common Whiskered Bat, the one exhibiting a heavy muscular body, and strong wings capable of vigorous and sustained flight, and with jaws and teeth of sufficient size and power to masticate a Cockchafer whilst on the wing with perfect ease; and the other species having a slight and feeble body, with very slender wing-bones supporting a membrane of equal delicacy, suited only for flight in sheltered spots, and with a muzzle and teeth of such small size as to be fitted only for taking minute food in such situations.

The difference between the two is quite sufficient to justify generic separation, and the work is easy so far as these two species are concerned; but unfortunately a whole host of species come in between them, and bring such a series of small modifications as to reduce the distinction to one of degree only; so that in attempting to separate

them the results are anything but satisfactory. And it is scarcely necessary to go beyond the European list to meet with an unbroken series from the one to the other. Under these circumstances, any character which could be found sufficiently marked to show a difference apart from that of degree, however small it might be, would be valuable as a means of classification.

In default of any single character which might be considered sufficient for this purpose, a certain combination of characters, not in themselves sufficiently distinctive taken separately, might nevertheless, if taken collectively, answer the desired end; and further, the decision would be strengthened if we were to find that these characters were so precisely uniform in *degree*, as to afford no specific differences beyond those of the size of the animal and the quality and colour of the fur.

Such is literally the case with the group which I have now to consider. Although inhabiting widely separated localities—Europe, Asia, Africa and Australia,—its several members scarcely exhibit any greater differences than those above noted, viz. colour and size.

The genus *Miniopteris* was first proposed by Prince C. L. Bonaparte in his fine work on the Fauna of Italy, for a species which was there described as *Miniopteris Ursinii*, being regarded as new. It has however been subsequently shown by MM. Keyserling and Blasius, that this species is identical with the one described a long time previously by Natterer, in Kuhl's 'Memoir on the Bats of Germany,' under the name of *Vespertilio Schreibersii*. The specific name given by Natterer is the one now generally admitted, whilst the generic one given by Prince C. L. Bonaparte is refused or adopted according to the opinion respecting the generic distinctions.

In the following monograph the generic peculiarities will first be pointed out; and this will be followed by a detailed description of the earliest-described and best-known species—the European one, after which the points of dissimilarity in the other species will be adverted to \*.

# Genus MINIOPTERIS, Bonap.—Trilatitius, Gray (in part).

Top of the head much elevated; face very short, concave in its longitudinal direction; muzzle obtuse, not much depressed; nostrils near together, with their upper and inner margins slightly projecting, the space between these projecting parts being slightly emarginate. This notch between the nostrils does not, however, pass downward through the upper lip, which is entire and rather prominent. The nostrils themselves are crescent-shaped and open sublaterally. From the outer side of each is a vertical notch or groove passing through the lip, but leaving its central portion entire and

<sup>\*</sup> I am aware that some zoologists regard the Asiatic and African representatives of the genus as referable to the European one, an opinion in which I partially concur. The African one, Vespertilio dasythrix of Temminck, is I believe identical with Miniopteris Schreibersii; but the Asiatic ones occurring in the islands of the Indian Archipelago and in Australia, I believe to be perfectly distinct species.

slightly projecting\*. Lateral parts of the lip thick and overhanging.

Lower lip with a distinct and clearly defined reflex central portion,

as in Natalus, but of much less extent.

Ears angular-round, very short; tragus short, of uniform breadth, round at the end, and curved inwards. Tail as long as the head and body. Wing-membranes extending to the extremity of the tibiæ. Os calcis short. Cutaneous system ample; middle phalange of the second and third finger very short. Fur very thick and soft.

Skull with the bony palate extending backwards as far as the molar series only. Intermaxillary bones nearly meeting in front, so as to allow space for a considerable interval on each side between the outer incisors and the canines, and leaving only a small interspace between the two inner incisors. Incisors placed across the opening between the canines.

### 1. MINIOPTERIS SCHREIBERSII.

Vespertilio Schreibersii, Natt. in Kuhl, Wetter. Ann. iv. 41,1817; Desm. Mamm. p. 138, 1820; Fisch. Synop. Mamm. p. 104, 1829; Temm. Mon. Mamm. ii. p. 174, 1835-41; De Selys-Longch. Etude Micro-mamm. p. 138, 1839; Wagn. Supp. Schreb. Saugth. i. 508, 1841.

Miniopteris Schreibersii, Keys. et Blas. Wiegm. Arch. v. 323, 1839; Die Wirbelthiere Europ. p. xiii. et 44, 1840; Less. Nouv.

Tab. Règne Anim. p. 27, 1842.

Miniopteris Ursinii, Bonap. Faun. Ital. fasc. 21. fol. 106, 1832-42; Gray, Mag. Zool. & Bot. ii. 497, 1838; De Selys-Longch. Etude Micro-manım. p. 139, 1839; Less. Nouv. Tab. Règne Anim. p. 27, 1842.

Vespertilio Ursinii, Temm. Mon. Mamm. ii. p. 179, 1835-1841.

Vespertilio dasythrix, Temm. Mon. Mamm. ii. p. 268.

Vespertilio Natalensis, Smith, South African Quart. Journ. new ser. v. 1, 1832.

Miniopteris dasythrix, Smith, Ill. Zool. S. Africa, no. 27. pl. 52, 1848; Schinz, Synop. Mamm. i. p. 166, 1844.

The crown of the head is very much elevated, and the face so much depressed as to give the appearance of a deep hollow across its middle. The muzzle is very short and round, but it is not itself much depressed, as in the flat-headed species such as the *Noctule*. From the great concavity of the middle part of the face, the muzzle appears to have an upward direction. The nostrils are small, near together, and in the specimens preserved in spirit are directed nearly

<sup>\*</sup> This projecting part of the upper lip is somewhat singular. Separated by the two vertical grooves above mentioned, it is well and clearly defined, and has somewhat the appearance of the cartilaginous fore part of the palate of some Ruminants, as that of the Sheep. Its surface is conspicuously granular, and in size it exactly corresponds with the naked reflex portion of the lower lip, so that when the mouth is closed the two parts fit closely together.

straight forward; but in dried specimens they have a sublateral direction.

The ears are very short, somewhat quadrangular in form, with the angles rounded, and have their outer margin brought forward along the face in the form of a very narrow strip of membrane to near the corners of the mouth. The inner margin rises from the side of the head in a perpendicular direction for a very short distance, and then making an angle, which if not rounded off would be a right angle, proceeds outwards in nearly a straight line, and forms another similar rounded angle with the outer margin. About the middle of the outer margin is a slight hollow.

The tragus reaches fully halfway up the ear, and in actual measurement nearly equals it in length, both being viewed as simple projections and measured along their central lines. Its form is somewhat similar to that of the tragus of the common *Pipistrelle*; but it is relatively longer and narrower, of absolutely uniform breadth, and with the tip more regularly rounded. It curves inwards for the whole of its length, but most strikingly so about one-fourth of

the distance from the end.

The wings are long in relation to the size of the animal, and the longest finger is fully twice the length of the fore-arm. The middle phalanges of the two longest fingers in the wing are very short, but the relative lengths of the same parts in the other fingers are not remarkable. In the relative proportions of these bones to each other, they closely resemble the same parts in Furipterus, but in no other group that I have had the opportunity of examining. Thumb of medium length and size, with the terminal phalange a little longer than the basal one; its claw rather strongly hooked.

The wing-membranes are attached as far as to the extremity of

the tibiæ.

The hinder limbs are of medium proportion; but the feet are rather large, and have the toes of about one-half of their entire length. The

claws, although of moderate size, are strongly hooked.

The tail is long, and is composed of nine vertebræ, and is fully equal in length to the head and body. It is wholly enclosed by the interfemoral membrane, which has about thirteen transverse dotted lines, which are very near together on its basal portion. All the membranes are somewhat diaphanous, but present no great pecu-

liarities of reticulated or other markings.

The fur is soft and thick, of medium length, and rather faintly bicoloured, both above and below. That of the upper parts is dark brownish grey at the base, its terminal half paler and strongly tinged with brown. Beneath it has similarly coloured roots, with palish grey-brown tips. Such is the colour of the European examples. Those from Algeria are characterized by a strong ashy tinge over the whole of the fur, and in some specimens the pubal region is wholly ash-coloured. Examples from Lake Ngami have all the upper parts of the body of a deep brownish grey (similar in colour to the roots of the hair in the European specimens), with the extreme tips of the hairs slightly paler, but not browner. Beneath,

the fur is nearly black at its base, and tipped with ash colour; and the latter colour prevails around the region of the pubes. The specimens from this locality represent the Vesp. dasythrix of M. Temminck, and correspond pretty accurately with his description; but specimens from the Cape are described by Dr. A. Smith as having the upper parts "intermediate between chestnut-brown and yellowish brown," and the under parts "dull pale brownish red, tinged with wood-brown and yellowish brown, in places strongly tinted with pale reddish orange." I have seen no African example of this colour.

The cerebral region of the skull is very much elevated, almost as much so as in *Furipterus*, the evenness of its convexity being interfered with only by a narrow transverse depression occupying the position of the suture uniting the occipital with the parietal bones, by a moderately developed sagittal ridge, most conspicuous on the frontal region, and by an occipital crest of similar degree of development.

The facial part of the cranium is very much depressed, and it is also considerably compressed. The intermaxillary bones are, as in Furipterus, more developed than is usually the case among the Vespertilionidæ, affording sufficient space for the incisors to be inserted in a nearly perpendicular position, and at the same time to leave a considerable interval between them and the canines. It is worthy of remark, that in this, as in the crania of the other species of the genus, the antorbital foramina are placed more forward than usual, only just behind the canines. The nasal opening is rather small, and the corresponding notch in the front of the palate proportional to it in size. The orbit is small, and the zygomatic arches have a very moderate lateral curvature. As in other species having a dome-shaped cranium, the condyloid fossæ are in a line high above that of the teeth, and the zygoma in consequence starts at an angle from the line of the dental series and passes upwards and backwards to the condyle. In those species which, like the common Noctule, have a flat cranium, with both the facial and cerebral surfaces in one continuous line, the dental series and the zygoma are in nearly a continuous line also.

The bony palate presents one peculiarity, viz. that it scarcely extends posteriorly beyond the last molar, whereas in the generality of the *Vespertilionidæ* it reaches as far backwards as halfway between the last molar and the condyles, and in some instances reaches even so far back as to the latter.

The lower jaw does not present any great peculiarities of structure. It has a rounded posterior angle, to adapt itself to the elevated position of the cranial condyles, and a distinct and well-marked posterior process, about halfway between the angle and the condyloid process. The coronoid process is of ordinary form and on a level with the condyle.

Viewed in front, the upper incisors are seen to be in two pairs, which are separated by a moderately wide opening in the centre, and by another of less extent on each side, between them and the canines; but the teeth in each of these pairs are placed close together. In

direction, their tips point a little inwards. Seen laterally they are

nearly vertical.

In form they present no remarkable deviation from what is common in the genera Vespertilio and Scotophilus: they are of nearly equal length, the two nearest the canines simple in form and somewhat blunt, the inner ones more pointed and with a kind of basal cusp or point near to the outer ones. The canines are of medium size, and conical, with but little angularity, and possessed of a moderately developed cingulum. The first pre-molar is small, and has a central pointed cusp, surrounded by a flattish space, from the centre of which it projects. Its general appearance is that of a diminutive canine having an exceedingly broad cingulum. Succeeding to this, and contiguous to the first true molar, is a tooth which may be regarded as taking the place of the sectorial tooth of the Carnivora; it is rather long and pointed, with an inner basal ring, which is considerably developed in the direction of the palate.

The true molars have nothing remarkable either in number or

form.

In the lower jaw the incisors exhibit a slight deviation from the usual type. The four central ones are small and trilobed; but the two outer ones are conspicuously larger, and instead of having a thin lobated edge, have a roundish flattened crown with a transverse cleft through its centre, for the reception of the point of the outer upper incisor when the jaws are closed.

The lower canines are of the ordinary form; but it is worthy of remark, that the basal ring or collar is considerably developed, running off into a flat basal space in the direction of the first premolar, but rising up into a kind of blunt accessory cusp near to

the large incisor already mentioned.

This form of canine cannot, however, be instanced as peculiar to the genus, since I find that the additional cusp occurs more conspicuously in some other species, as the common *Noctule Bat*, and the equally common *Long-eared Bat*; whilst in some others, as the *Kerivoula picta* and the *Barbastelle*, it appears as a mere ring of enamel around the base of the tooth.

The three following teeth are of a very simple form, conical and pointed, surrounded by a *cingulum* which is rather more developed on the inside of the teeth than on the outer. They increase in size evenly and rapidly, so that the one contiguous to the molars is the highest tooth in the jaw, excepting the canine, and even to that it is not greatly inferior.

The only peculiarity I am able to note respecting the true molars is, that the first has its anterior inner cusp so much produced as to be nearly even with the outer anterior one, usually much the highest.

The numeration of the teeth may be thus stated:

In. 
$$\frac{2-2}{6}$$
; Can.  $\frac{1-1}{1-1}$ ; Prem.  $\frac{2-2}{3-3}$ ; Mol.  $\frac{3-3}{3-3} = \frac{16}{20}$ .

The dimensions in column 1 of the following table are those of a specimen from the Bannat; 2, those of one from Sicily: both preserved in spirit. Column 3 contains the dimensions of the mutilated

skeleton, which is all that remains of the type of Prince Bonaparte's *Miniopteris Ursinii*; whilst column 4 refers to a specimen collected in Algeria in 1856 by the Rev. H. B. Tristram, and very kindly presented to me; and columns 5 and 6 refer to specimens from Lake Ngami, collected by Mr. Anderson. The three last-mentioned specimens are all preserved in skin, and their dimensions are therefore less to be depended on than those of the specimens in spirit.

	N.	1.	11	2.	11.9	3.	E-	4.		5.	1	6.
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of the head and body	2	3	2	3			2	9	2	4	2	3
of the tail	2	3	2	1	1	10	2	0		00-F	(101)	41000
—— of the head	0	81	0	81			0	81	0	81	0	8
of the ears	0	3	0	3			0	3	0	$3\frac{1}{4}$	0	3
of the tragus		2	0	21/2			0	2	0	2	0	21/2
of the fore-arm	1	9	1	9	1	83	1	81	1	9	1	81
of the longest finger		6	3	5	3	3	3	4	3	5	3	3
of the fourth finger	2	2	2	0	2	0	2	1	2	2	2	0
- of the thumb	0	4	0	3	0	$3\frac{1}{4}$	0	31/2	0	$3\frac{1}{2}$	0	$3\frac{1}{2}$
of the tibia		9	0	81	0	73	0	83		81	0	8½ 4¾
of the foot and claws		$5\frac{1}{2}$	5	0	0	43	0	5	0	41	0	
Expanse of wings	14	0	13	0	13	6	12	9	13	0	12	6

## 2. M. BLEPOTIS.

Vesp. blepotis, Temm. Mon. ii. p. 212, 1835-41; Müller, Over. Zoog. d. Ind. Archiv, p. 23, and table; Schinz, Synop. Mamm. i. p. 172, 1845.

Miniopteris blepotis, Blasius, Wiegm. Arch. Bd. 6. p. 4, 1840. Pipistrellus blepotis, Less. Nouv. Tab. Règn. Anim. p. 30, 1842. Trilatitius blepotis, Gray, Ann. & Mag. N. H. v. 10. p. 258, 1842;

Cat. Mamm. Brit. Mus. p. 26, 1843; Zool. Voy. Samar. p. 8, 1849.
Scotophilus Morio, Gray, App. Greg's Narrat. p. 405, 1841; Cat.
Mamm. Brit. Mus. p. 29, 1843; Wiegm. Arch. Bd. 8. p. 339, 1842;
Schinz, Synop. Mamm. i. p. 192, 1844.

Vesp. Eschscholtzii, Waterh. Proc. Zool. Soc. 1845, p. 4. Noctulinia? Eschscholtzii, Gray, Zool. Voy. Samar. p. 9, 1849.

The following comparison of this species with the last has been made between a great number of examples of both, most of those of *M. blepotis* being preserved skins, whilst the greater part of those of *M. Schreibersii* have been preserved in spirit. It is necessary to make this statement before proceeding further, as the foregoing description of the latter species was drawn up from the specimen in spirit, whereas the stuffed specimens of both species have been resorted to in the following comparative description. Unfortunately I have not yet obtained a sufficient number of *M. blepotis* in spirit to be able to give as many details as I could desire.

Compared with M. Schreibersii, the face of the present species appears more elongated, although still very short; and it is rather more pointed, and has the nostrils more prominent. The ears, too,

are relatively somewhat longer.

In quality the fur is pretty similar, from whatever locality the animal may have been obtained. That of the upper parts is uni-

coloured, sometimes having the tips of the hairs a little paler. In M. Schreibersii it is bicoloured. The general colour is very dark brown, varying slightly in its hue according to the locality from which the examples have been obtained. Beneath it is bicoloured in both species. In the present one it is dark brown at the base, tipped with a paler tint of the same colour, which latter occupies the

whole length of the hairs on the pubal region.

Examples from Japan have for the most part a rich umber tinge in the colour of the fur; in others from Amboyna a black-brown is the prevailing colour, still however with a reddish tinge, whilst the majority of those from Australia have the fur of a very deep brown colour without such tinge. There is, however, a remarkable variety sometimes met with in the latter country, which may be thus mentioned:-The fur of the head and fore part of the back is of the ordinary sombre colour, but that of the loins and rump is on the contrary of a bright chestnut-brown, very silky and shining, and the change from one colour to the other is not effected by a regular gradation, but takes place almost abruptly, a wavy irregular line across the loins marking the confines of the two. But in one or two specimens which I have seen, the chestnut colour extends up the middle of the back in a narrowish line, almost to the shoulders, and produces a very marked and beautiful variety \*. In these specimens the region of the pubes also is lighter in colour than in the ordinarily coloured individuals.

I have not been able to examine examples of this species taken at different periods of the year, so as to follow out the notes given by M. Temminck of the seasonal changes in the colour of the fur.

Some differences are observable in the crania of this and the last species, which deserve mention. From the greater length of the muzzle, as already noticed, it might be expected that the cranium also would exhibit some corresponding elongation of its anterior part, and accordingly that is seen to be the case. On comparing the two skulls, that of *M. Schreibersii*, besides being altogether the smaller one, has the facial portion more compressed immediately in front of the orbits, and is less depressed. The posterior part of the palate also is narrower, so that the zygomatic arches spring at once outwards from the maxillary bones; whilst in blepotis, where this part of the skull is relatively broader, the zygoma passes off in a backward direction, scarcely making an angle with the outer surface of the maxillary bones.

Another very apparent difference consists in the much greater

Mr. Blyth has remarked of many of the Indian Bats, that they are subject to what he calls a rufous phase: perhaps this remark may be extended to the Australian examples of the present species, although why this should not equally take place with those inhabiting the islands of the Indian Archipelago, is rather

difficult to decide.

<sup>\*</sup> Somewhat the same style of colouring occurs in the Scotophilus Gouldii, also from Australia, and in some examples there is a slight tendency towards the same peculiar division of the two colours. Scotophilus tuberculatus also, from New Zealand, is very similarly coloured; but the gradation from the dark fore parts to the more rufous hinder parts is very slight and uniform.

length and substance of the teeth, especially the canines in *M. ble-potis*. In this species the upper canines are so long as to pass, when the jaws are closed, almost to the lower margins of the lower jaw, whilst in *M. Schreibersii* their points reach only to about the middle of the ramus. It is also deserving of notice, that the singularly formed outer incisors of the lower jaw exhibit the peculiarity already alluded to in a much greater degree in this species than in *M. Schreibersii*, or indeed than in any other species appertaining to the genus.

Columns 1, 2 and 3 in the following table of dimensions refer to specimens from Japan, 4 and 5 to specimens from Amboyna, and 6 to the specimen in the collection of the British Museum, from which

Mr. Waterhouse took his description of V. Eschscholtzii.

	100	1.		2.	100	3.	1	4.	1.0	5.	1	6.
The state of the s	in.	lin.										
Length of the head and body	2	6	2	9	2	6	2	5	2	6	2	1
of the tail	2	0	2	2	2	2	1	9	1	9	2	1
of the head	0	8	0	9	0	9	0	8	0	9	0	81
of the ears	0	3	0	3	0	31	0	3	0	3	0	3
of the tragus		2	0	21	0	21	0	21	0	21	0	21
- of the fore-arm		9	1	9	1	9	1	8	1	10	1	91
- of the longest finger	3	6	3	6	3	7	3	3	3	8	3	7
- of the fourth finger		0	2	1	2	2	2	0	2	2	2	4
- of the thumb	0	4	0	4	0	4	0	31	0	31	0	31
of the tibia	0	9	0	81	0	9	0	8	0	9	0	81
- of the foot and claws	0	4	0	41	0	41	Õ	4	0	41	0	4
	14	ô	14	0	14	0	12	6	14	0	13	6
Expanse of wings		•		0	LI	0	12	0	AT	V	10	U

The specimens, the dimensions of which are given in the next table, formed part of Mr. Gould's Australian collection, and were obtained at several localities. They have been selected from a considerable number as fair representatives of the so-called *Scotophilus Morio*.

	1.	2.	3.
	in. lin.	in. lin.	in. lin.
Length of the head and body	2 8	2 9	$28\frac{1}{2}$
—— of the tail	2 2	1 9	2 3
——— of the head	0 9	0 9	$0  8\frac{3}{4}$
— of the ears	$0  3\frac{1}{2}$	$0  3\frac{3}{4}$	$0 \ 3\frac{1}{4}$
—— of the tragus	$0  2\frac{1}{4}$	$0 \ 2\frac{1}{2}$	$0  2\frac{1}{2}$
of the fore-arm	1 10	$1 9\frac{1}{3}$	1 9
of the longest finger	3 6	3 6	3 6
of the fourth finger	2 2	2 3	2 1
of the thumb	$0 \ 3\frac{1}{3}$	0 4	0 4
of the tibia	0 9	0 9	$0.8\frac{3}{4}$
of the foot and claws	0 5	0 5	$0  ext{ } 4\frac{3}{4}$
Expanse of wings	13 10	14 0	13 6

# 3. M. TRISTIS.

Vespertilio tristis, Waterhouse, Proc. Zool. Soc. pt. xiii. p. 3, 1845; Gray, Zool. Voy. Samar. p. 31, 1849.

The muzzle of this species is relatively broader and more obtuse than in any other species of the genus; and this peculiarity, together with its superior size, is sufficient at once to distinguish it from the last species, which it otherwise resembles. The peculiarity pointed out by Mr. Waterhouse of having the nostrils directed sublaterally, whilst in the allied species M. blepotis they open almost in front, does not, I think, furnish a very valuable character in any of the species which have the glands of the upper lips much developed. When these glands are large, they often advance so far forward as to thrust the outer margins of the nostrils forward also, or at any rate to close up the vertical notch already mentioned as separating the lips from the nostrils. This gives the latter the appearance of opening directly in front, whereas in the same species when examined in a dry state, when the lips have shrunk and produced a more pointed muzzle and prominent nostrils, the latter are found to open more or less laterally. And as it is not uncommon to meet with different individuals of the same species (in this genus) having these glands developed in a slightly different degree, so it is common to observe a corresponding difference in the nostrils. A good number of examples will alone supply the necessary materials by which to distinguish truthfully the characters of allied species. It remains therefore, as I think, to be proved by the examination of a greater number of examples, that this species differs essentially in what may be called a generic peculiarity from the so-called Vesp. Eschscholtzii, or that the latter differs from the Vesp. blepotis of M. Temminck.

I can detect no difference in the distribution or quality of the fur from the species last described. It is unicoloured, and the general colour is very deep brown, as in the Australian specimens of *M. blepotis*. When seen in spirit, it appears to be sooty black.

As far as is at present known, this species is confined to the Phi-

lippine Islands.

and the same of th	in.	lin.
Length of the head and body	2	6
— of the tail	2	5
——— of the head	0	101
——— of the ears	0	4
——— of the tragus	0	$2\frac{3}{4}$
——— of the fore-arm	2	1
——— of the longest finger		3
—— of the fourth finger	2	5
—— of the thumb		$3\frac{1}{2}$
—— of the tibia		102
——— of the foot and claws	0	$5\frac{1}{2}$
Expanse of wings		6 or 16 in.*

<sup>\*</sup> It will be observed, that the dimensions I have given differ a little from those given by Mr. Waterhouse, both taken from the same specimen. But the difference is very trifling in all respects save in the expanse of the wings, and here a good deal depends upon the measurer. I have usually taken this dimension by means of a thread extended along the bones of the wings to the shoulders, and then taken the breadth between them with a pair of compasses.

If the expanse be taken in a straight line between the tips of the open wings,

# 4. M. AUSTRALIS, n. s.

This species differs from *M. blepotis* in having the face more hairy, the ears relatively smaller, and the thumb much smaller, and in being itself much smaller. The fur too of the under parts encroaches somewhat on the membranes, whilst in *M. blepotis* the

latter are quite free from fur.

M. Temminck, speaking of the latter species, says, "La femelle n'a guère plus de 3 pouces 4 lignes (of length); envergure à-peuprès 10 pouces; antibrachium 1 pouce 6 lignes;" which statement of dimensions appears to apply with moderate accuracy to the present species. It is not, however, the female of M. blepotis, as I have examined specimens of both sexes, adult and immature; and if neither age nor sex will explain the great difference in size, it must be regarded as a very remarkable variety or as a distinct species. The fact of its occurrence over a very considerable range of country—the Indian islands and Australia, inhabiting alike island and continent without manifesting any difference in appearance, is very strong evidence against its being a mere variety, and in my opinion fully establishes it as a distinct species.

The general colour of the fur is very similar to that of *M. blepotis*; but the generality of specimens have a more decided rufous tinge, which is given by the tips of the hairs being paler and redder than the base. But this is not perceivable in some individuals, and thus they are of the ordinary sombre colour of the Australian examples

of M. blepotis.

In the following Table of Dimensions, columns 1 and 2 refer to adult males, 3 to an adult female in young, 4 to a youngish male with the wing-joints imperfectly ossified, all of them being preserved in spirit in the British Museum; and column 5 to a specimen in skin in the same collection,—the whole of them having been collected in Australia by Sir G. Grey, K.C.B., and presented to the National

and the second second		1.		2.	0	3.	11.	4.		5.		6.
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	lin.
Length of the head and body	1	11	1	9	1	8	1	8	1	7	2	0
of the tail	1	9	1	8	1	8	1	6	1	5	1	5
of the head	0	8	0	71/2	0	74	0	71/2	0	71	0	7
of the ears	0	3			0	$3\frac{1}{2}$	0	31	0	3	0	3
of the tragus	0	$2\frac{1}{2}$			0	2	0	21/4	0	2	- 0	2
of the fore-arm	1	7	1	$6\frac{1}{2}$	1	5	1	6	1	51	1	5
	3	0			2	8	2	8	2	9	2	8
of the fourth finger	1	10			1	8	1	8	1	8	1	8
— of the tibia	0	7			0	7	0	7	0	6	0	61
		43			0	33	0	$3\frac{1}{2}$	0	4	0	31
Expanse of wings	11	8	11	0	10	6	10	7	11	0	10	6

Collection. The dimensions in column 6 have been taken from the specimen of M. blepotis mentioned in Dr. Gray's 'Catalogue of

it must be evident that the length of this line will depend on their complete or partial expansion, and in dried specimens it is almost impossible to have them all with the wings in an exactly similar position. It is on this account that I have adopted the method just stated.

the Mammalia of the British Museum,' as having been received from the Leyden Museum, its country being Timor. It is probable, therefore, that this may have been mistaken by M. Temminck for the female of that species. Be this as it may, the specimen in question is certainly a *male*, and the perfectly ossified condition of

the wing-joints indicates that it is adult.

The name under which I have described this species was given under the impression that it was exclusively a native of Australia. It was not until after I had arranged and named the specimens in the British Museum and in some other collections, that I found it to be an inhabitant of Timor (and probably of other islands of the Indian Archipelago) as well as of Australia, and that the name of australis was not strictly appropriate. But to avoid the confusion which might possibly arise from a change of name, I have thought it desirable that it should remain unaltered.

Of the two following species I am unable to give as complete an

account as I could wish.

The first is exhibited in the Leyden Museum with the name of Vesp. tibialis affixed, but I am not aware that any description of it has appeared. In that collection there are four specimens, all from Amboyna. A single specimen in my own collection, received also from Amboyna by MM. Verreaux, although in a somewhat mutilated condition, will nevertheless furnish a sufficiently complete description by which to recognize the species, if species it really is.

In general appearance it closely resembles M. bleoptis, but is a trifle smaller, and moreover appears to differ remarkably in all the specimens, in having the extremity of the tibia perfectly free for nearly a third of its length. The wing-membranes do not extend beyond two-thirds of the length of the tibia, and the os calcis adheres closely to it up to the same point, and then starts from it at nearly a right angle, so that the extremity of the limb is completely

unencumbered, and appears like a slender shank.

If this peculiarity is persistent, and not due to the state of preservation, it would mark out a very distinct and good species; but it is very desirable that other specimens be examined that have been preserved in spirit, in which state they show these parts in a more natural condition. It is worthy of note, however, that all the specimens present precisely the same appearance; that is, the leg is free for the same length, and this would hardly be the case were it due to the state of the preservation merely. On the other hand, the species so closely resembles in all other respects the *M. blepotis*, that one may well hesitate and view with suspicion a species having only a single point of difference.

The following are the dimensions of the specimen in my own col-

lection :-

		in.	lin.
Length	of the head and body, about	2	6
	of the head		
11/21/2	of the ears	. 0	$3\frac{1}{2}$

	in.	lin.
Length of the tragus	0	2
— of the fore-arm	1	$6\frac{1}{2}$ or 7 lin.
—— of the longest finger	2	11
—— of the fourth finger	1	8
—— of the tibia	0	7
—— of the tibia, free part	0	7
—— of the foot and claws	0	$3\frac{1}{9}$
Expanse of wings		6

The other species to which I have alluded bears considerable resemblance to the one I have called *M. australis*. A single specimen in the British Museum, received from the Stockholm Museum with the name of *Vesp. scotinus* affixed, furnishes all the information I possess respecting it, excepting that it is also labelled "Port Natal." I am not aware that any description has been published.

The fur of the upper parts is fuliginous-brown, with the tips a little paler and greyer in hue. Beneath similar, but with the tips of the fur paler, especially about the pubes. The general colour more nearly resembles the darker examples of *M. Schreibersii*, which have been described as *V. dasythrix*, than any other species; and

possibly it may prove to be a small example of that species.

The examination of a single specimen does not, amongst allied species, afford sufficient evidence for a satisfactory decision; and I prefer therefore to leave undecided the claims of the present so-called species, until further information afford more ample means of deciding.

The following are the dimensions:-

	ın.	IIIIe
Length of the head and body, about	1	10
— of the head	0	7
— of the ears	.0	3
——— of the tragus	0	2
— of the fore-arm	1	6
of the longest finger	2	4
—— of the fourth finger	1	11, nearly.
of the thumb	0	$3\frac{3}{4}$
of the tibia	0	
of the foot and claws	0	
Expanse of wings, about		6

#### MISCELLANEOUS.

Further Observations on the Genus Teredina, Lamarck. By Dr. J. E. Gray, F.R.S. &c.

WHEN I sent my paper on *Teredina* (p. 85), I was not aware that M. Deshayes had written a long article on this genus, illustrated with several most instructive figures, in the new edition of his 'Coquilles Fossiles de Paris,' p. 122. t. 3 & 4.